

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF LAND QUALITY VOLUNTARY REMEDIATION SECTION

100 N. Senate Avenue Indianapolis, IN 46204-2251

INSTRUCTIONS: This checklist shall be **completed and returned** for all Remediation Work Plan (RWP) submittals required under IC 13-25-5-7. When completed, please return this form and support documents to the address given in the box above.

The RWP provides the basis for IDEM to evaluate the proposed remedy for each VRP site. All of the following information is required to evaluate the selected remedy's effectiveness and to demonstrate that it is the most effective remedy for the site. The remediation work plan must provide a complete description of the past operations, the site investigation and the selected remedy for the site.

Required Elements	Present	Location
Site Delineated (Required for Approval)	If "No" Explain	
2 Paper Copies and 1 Electronic Copy of RWP (Large QA/QC data packets can be submitted as 1 electronic copy)	REQUIRED	

#### I. INTRODUCTION

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. Sources of contamination		
<ol> <li>Site name, address, and telephone</li> </ol>		
2. Current owner and contact information		
3. Historical summary of site ownership		
4. Type of facility, past and present operations		
5. Site contact responsible for VRP process		
6. Overview of initial discovery of contamination, spill		
history, & previous investigations conducted at the site		
B. Supporting Documents		
Discussion of relevant previous reports		
Data and documentation regarding site		
C. Remedial Action Objectives		
Remediation and cleanup objectives for all affected		
source areas, media, contaminants, and exposure		
pathways		
2. Work items planned for remediation		

#### II. INVESTIGATION ACTIVITIES

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. Summary of Information Used to Select Remedy		
Baseline assessment and literature search		
a. Geologic and hydrogeologic summary		
<ul> <li>b. Physical and political geographic information</li> </ul>		
Extent of subsurface work, including:		
a. Copies of all boring logs and monitoring well		
construction logs		
b. Boring and well location maps		
c. Field screening results for soils and groundwater		
d. Sample location map, cross sections, groundwater		
flow, and isoconcentrations maps		

Report/Plan Element	Present (Y,N, or NA)	Location in Document
P. Summany of Site Investigation	(1,N,OFNA)	
B. Summary of Site Investigation  1. Identification of all contaminants		
a. Chemical and physical properties		
b. Contaminant toxicological data		
c. Potential effects of residual contamination		
Summary of site-specific Geology & Hydrogeology		
Discussion of Sources of Contamination		
Summary and Map of Extent of Contamination		
a. Impacted media, such as soil, soil vapor, sediment,		
groundwater, surface water, and air		
b. Concentrations of contaminants with tables		
c. Concentration trends		
C. Summary of Risks Associated with Site		
Human, ecological, and environmental risks for each		
contaminant & impacted media, including discussion		
of long and short-term risks, environmentally sensitive		
areas, and endangered species		
Impact of current and future land-use issues, if		
applicable, including need for environmental deed		
restrictions and restrictive ordinances		
D. Background Concentration Assessment		
Summary of naturally occurring site contaminants     Packground data in tabular format & hackground		
Background data in tabular format & background		
sampling location map 3. Statistical comparison of background concentrations to		
concentrations in potentially contaminated media		
Reliability and applicability of background data		
E. Additional Field Investigation Requirements		
Additional investigations required to effectively		
complete the design or the installation of the selected		
remedial method		
Reasons for additional investigation		
Description of additional work to be completed		

#### **VAPOR INTRUSION**

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. Discussion of ground water results compared with the Tables in the IDEM Remediation Closure Guide		
B. Description of further monitoring required until detected levels are below the screening levels in the Remediation Closure Guide		

## III. REMEDIATION PLAN

Report/Plan Element	Present	Location in Document
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A. Evaluation of Remedial Alternatives		
<ol> <li>The remedial alternatives evaluated must be identified,</li> </ol>		
and the rationale for their selection must be provided.		
In addition, the remediation work plan should describe		
parameters evaluated for each of the selected		
alternatives. The parameters should include, but not		
necessarily be limited to, the following:		
a. Extent of remediation effort		
<ul> <li>b. Technical feasibility to address physical and</li> </ul>		
chemical characteristics of media		
c. Projected contamination removal & treatment rates		
d. Protectiveness of human health		
e. Cleanup criteria		
f. Ability of each alternative to achieve cleanup criteria		
g. Community acceptance		
h. Anticipated volume of contaminated materials to be		
treated		
i. Ease of technology application or implementation		
j. Dimensions of major technologies & space		
limitations		
k. Process parameters		
I. Clean up time frames		
m.Transportation distances		
n. O&M Costs		
o. Any other special considerations		
Summarize conclusions for each of the technologies		
evaluated, and provide reasons each technology would		
or would not be appropriate  3. Need for treatability study or pilot test. Describe the		
treatability study or pilot test and the reasons it is		
required, and provide the following information:		
a. Proposed study methodology		
b. Clear statement of treatability study or waste		
characterization objectives		
c. Proposed scale of study (e.g., bench, pilot, etc.)		
d. Data requirements and evaluation		
e. Pilot plan startup and O&M		
f. Schedule for pilot study		
g. Remedial technologies to be tested & equipment		
required		
h. Treatability assessment and waste characterization		
i. Proposed disposal arrangements for wastes caused		
during remediation, plus approvals & necessary		
documentation		
j. Installation and startup procedures, including:		
- Data requirements and analytical methods		
- Pilot Plan O&M requirements		
- Data analysis & interpretation of results to be used		
- Full-scale technology application requirements and		
notation of limitations & optimum operating		
conditions		

Report/Plan Element	Present (Y,N, or NA)	Location in Document
B. Selected Remediation Technology – If more than one remedial alternative will be used to address different onsite areas, the remediation work plan must describe how the remediation system, as a whole, will work. A flow diagram, conceptual sketch, or other approach should be used to illustrate the components of the remediation system. Major equipment, such as pumps, air strippers, and in-situ treatment equipment, must be indicated. The		
work plan should include a site map showing areas to be remediated and proposed locations of major equipment.  1. Identify which evaluated technology or combination of technologies will be implemented at the site, including the technical, economic and social acceptance rationales for the final selection.		
Identify the need for risk assessment and provide:     a. Parameters to be addressed     b. Proposed risk assessment methodologies     c. Potential exposure pathways		
d. Exposure assumptions e. Environmental fate and transport data f. Tabulated parameters and resulting cleanup levels 3. Provide a detailed description of the selected		
technology and system setup, including the following information:  a. Technical specifications of all equipment & processes  b. Proposed locations of all remediation equipment on		
a scaled site map, including piping runs and electrical wiring where applicable c. State or federal permit requirements for the system d. Waste disposal approvals needed to implement system		
C. Monitoring and Sampling Plan     1. Sampling plan details, including:     a. Sampling and monitoring parameters     b. Sampling and monitoring frequency		
c. Schedule for submitting results to IDEM for review and evaluation (quarterly progress reporting is minimum requirement)  Provide data management details, including a discussion of how the monitoring & confirmation		
sampling data will be documented & reported, & proposed progress reports formatting  D. Project Work Schedule		
<ol> <li>Projected installation and startup</li> <li>Sampling and monitoring schedule</li> <li>Contaminant removal &amp; treatment rates, including remediation progress milestones &amp; projected completion dates</li> </ol>		
4. O&M Plan, including:  a. Optimal operating conditions  b. Necessary O&M tasks, their frequency, replacement schedule & planned O&M replacement events		
c. Proposed inspection schedule		

	Report/Plan Element	Present (Y,N, or NA)	Location in Document
	<ul><li>d. Potential problems and their remedies</li><li>e. Contingency plan indicating how the applicant plans</li></ul>	(1,11,1)	
	to respond in the event of a system failure, including the following information:		
	- Description of alternate operation procedures to prevent undue hazards if the system fails		
	Notification procedure for system shutdown or failure  System modification procedures		
5.0	- System modification procedures  RISK ASSESSMENT (if applicable, appendix to the		
A.	Remediation Work Plan) List of parameters to be addressed by Risk		
В.	Assessment Description of proposed Risk Assessment		
C.	methodologies (e.g., types of modeling) Identification of potential pathways of exposure		
D. E.	Identification of exposure assumptions Environmental Fate and Transport data development procedures		
F.	Summary table listing parameters and calculated cleanup levels		
G.	List all Lines of Evidence to demonstrate that exposure pathways are incomplete and will remain incomplete (required for closure with levels above		
	RCG screening levels)		

#### **IV. REFERENCES**

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. References used to prepare remediation wo	•	
be cited or listed, including author, full title, p	ublisher,	
company, date, etc.		

## **V. APPENDICIES**

Report/Plan Element	Present	Location in Document
A. A QAPP is required for the remediation work plan. The QAPP should contain all elements discussed on page 29 of the Remediation Closure Guide (RCG). If a QAPP was submitted as part of the investigation report, it need not be re-submitted.	Υ	
B. A site Health and Safety Plan is required.	Υ	

## VI. ENVIRONMENTAL RESTRICTIVE COVENANT OR ORDINANCE

Report/Plan Element	Present (Y,N, or NA)	Location in Document
Text of the restrictions or ordinance		
Table of Last Known Concentrations of COC's and the		
closure standard		
Site Plan showing covered areas with detailed boundary		
description. IDEM data policy for reference:		
http://www.in.gov/idem/files/olg spatial data collection stan		
dards.pdf		

## OTHER VRP REQUIREMENTS

#### **COMMUNITY RELATIONS**

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. Mailing list of nearby properties; interested community groups; and local, state, and national officials (e.g., mayor, local newspaper, county health department, representatives, and senators).	Y	
B. Name and address of local library that will be the repository for the Remediation Work Plan during the public notice period.	Y	
C. Copy of the RWP notification letter	Υ	

#### **PUBLIC MEETINGS**

Report/Plan Element	Present (Y,N, or NA)	Location in Document
A. Discussion of plans to hold public information meetings about the proposed remediation process.		
B. Format of meetings.		
C. Proposed public meeting schedule and notification procedures.		
D. Discussion of plans to prepare and distribute information bulletins regarding the remediation system.		
E. Description of the format and types of information included in the bulletins.		
F. Description of the types of media that will be used to inform the general public (newspaper, radio, etc.).		
G. Description of the type of information that will be released to the media.		

#### **COMPLETION OF REMEDIAL ACTION**

#### **COMPLETION REPORT**

Report/Plan Element	Present	Location in Document
A. Statement that a Completion Report detailing the remediation system and confirmation sampling will be submitted upon completion of the remediation to the cleanup criteria.	Υ	